REMARKS

Reconsideration of this application, as amended, is respectfully requested.

THE CLAIMS

Claim 1 has been amended to recite that the temperature measuring device of the present invention comprises a single wedge shaped casing, as clearly supported by the disclosure in the drawings. In addition, claim 1 has been amended to recite the features formerly recited in claims 10-12 whereby a width of a leading edge section of the casing with respect to the direction of the line of flow of the airflow and an angle of inclination of the leading edge section of the casing with respect to the direction of the line of flow of the airflow are set such that lumps of ice and snow, which may form on the surfaces of the casing and which may detach from the casing and be blown downstream by the airflow into the engine, the airframe or other equipment of the aircraft, detach at a stage of growth so as to prevent damage to the engine, the airframe or the other equipment of the aircraft.

Still further, claim 4 has been amended to depend from amended claim 1 and to clarify the feature of the present invention whereby a width of a leading edge section of the casing

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with respect to the direction of the line of flow of the airflow is less than or equal to 0.5 mm.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

THE PRIOR ART REJECTION

Claims 1-2 and 9-12 were rejected under 35 USC 102 as being anticipated by newly cited US 5,752,674 ("Mears et al"); and claims 3-8 were rejected under 35 USC 103 as being obvious in view of Mears et al. These rejections, however, are respectfully traversed with respect to the claims as amended hereinabove.

According to the present invention as recited in amended claim 1, a temperature measuring device is provided which comprises a single wedge shaped casing arranged within an airflow flowing into an engine of an aircraft or on an external surface of an airframe of the aircraft, wherein (i) an angle of inclination of each blade surface of the casing with respect to a direction of a line of flow of the airflow, (ii) a width of a leading edge section of the casing with respect to the direction of the line of flow of the airflow, and (iii) an angle of inclination of the leading edge section of the casing with respect to the direction of the line of flow of the airflow are

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(all) set such that lumps of ice and snow, which may form on the surfaces of the casing and which may detach from the casing and be blown downstream by the airflow into the engine, the airframe or other equipment of the aircraft, detach at a stage of growth so as to prevent damage to the engine, the airframe or the other equipment of the aircraft.

With this structure, a temperature measuring device having a single wedge shaped casing is provided which can be used without a heating mechanism, and which accurately measures temperature, while preventing ice and snow from readily adhering thereto. In addition, even when ice and snow do adhere to the temperature measuring device according to the present invention as recited in claim 1, the temperature measuring device itself is not damaged, and the engine of the aircraft and the like are not damaged when the ice and snow detach. That is, according to the present invention as recited in amended claim 1, since each of the angle of inclination of each blade surface of the casing, the width of a leading edge section of the casing, and the angle of inclination of the leading edge section of the casing are (all) set to specific parameters so that lumps of ice and snow which adhere to the casing detach without growing large. As a result, it is possible to a single wedge shaped device for measuring the total temperature T1 of the airflow without damage to the engine

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or to the airframe or the equipment of the aircraft due to the impact of lumps of detached ice and snow.

As recognized by the Examiner, Mears et al is directed to an apparatus for preventing large pieces of ice from damaging the compressor inlet blades of an aircraft engine. However, it is respectfully submitted that Mears et al accomplishes this object by providing a sensor ice shield which does not at all correspond to the single wedge shaped temperature measuring device of the present invention as recited in claim 1. That is, as explained in detail hereinbelow, it is respectfully submitted that Mears et al prevents the formation of large pieces of ice on the sensor by promoting ice formation in multiple locations, instead of forming the casing of the temperature measuring device such that the lumps of ice and snow detach at a stage of growth so as to prevent damage to the engine, the airframe or the other equipment of the aircraft.

More specifically, Mears et al describes at column 1, lines 47-49 that an ice shield is provided "wherein a plurality of wedge portions has [have] multiple protrusions for promoting ice formation in multiple locations." In addition, Mears et al describes at column 3, lines 6-11 that the ice shield 112 thereof comprises wedge shapes 114 which promote ice formation in multiple locations, and that the wedge shapes 114 are

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"disassociated" such that multiple smaller ice formations are formed that are not large enough to cause damage when they detach. Thus, according to the teachings of Mears et al, the size of ice formations is reduced by providing a plurality of wedge portions (the wedge shapes 114).

By contrast, according to the present invention as recited in amended claim 1, a single wedge shaped temperature measuring device is provided wherein (i) the angle of inclination of each blade surface of the casing, (ii) the width of a leading edge section of the casing, and (iii) the angle of inclination of the leading edge section of the casing are (all) set such that the lumps of ice and snow which form on the surface of the casing detach from the surface of the casing and are drawn into the engine or onto the airframe or equipment of the aircraft detach at the stage of growth at which they do not cause damage to the engine or the airframe or the equipment of the aircraft.

More specifically, according to the present invention as recited in claim 2, the angle of inclination of each blade surface of the casing with respect to the direction of the line of flow of the airflow is, for example, less than or equal to 9°.

By contrast, Mears et al discloses that the included angle at point 120 is greater that 15°. The 15° angle is one optimum angle to entice the ice buildup to shed or release from the

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wedge. However, Mears et al explains that ice buildup per unit length of wedge appears to be equivalent for any sharp angle between 15° and 45°. Thus, it is respectfully submitted that the included angle at points 120 and 122 of Mears et al is designed differently than the angle of inclination of the blade surfaces of the present invention. That is, it is respectfully submitted that the included angle at point 120 according to Mears et al is not designed to detach lumps of ice and snow which adhere to the casing at the stage of growth so as to prevent damage to the engine, the airframe or the other equipment of the aircraft. Instead, according to Mears et al, minimizing ice buildup is accomplished by providing the plurality of wedge portions (the wedge shapes 114).

In addition, according to the present invention as recited in claim 1, the width of the leading edge section of the casing with respect to the direction of the line of flow of the airflow is also set to detach the lumps of ice and snow which adhere to the casing at the stage of growth so as to prevent damage to the engine, the airframe or the other equipment of the aircraft.

By contrast, Mears et al does not suggest designing the width of the point 120 (the leading edge section) so as to prevent ice buildup. That is, it is respectfully submitted that Mears et al does not disclose, teach or suggest detaching lumps

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of ice and snow which adhered on the casing at the stage of growth so as to prevent damage to the engine, the airframe or the other equipment of the aircraft by setting the width of a leading edge section of the casing with respect to the direction of the airflow, in the manner of the present invention as recited in amended claim 1.

Still further, according to the present invention as recited in claim 1, the angle of inclination of the leading edge section of the casing with respect to the direction of the line of flow of the airflow is also set to detach the lumps of ice and snow that adhered on the casing at the stage of growth so as to prevent damage to the engine, the airframe or the other equipment of the aircraft.

As shown in Figs. 3 and 4 of Mears et al, by contrast, only the lowermost wedge shape 114 inclines; the other two wedge shapes 114 do not incline at all. In addition, Mears et al does not describe any advantages to inclining the wedge shapes 114. Therefore, it is respectfully submitted that Mears et al does not disclose, teach or suggest detaching lumps of ice and snow which adhered on the casing at the stage of growth so as to prevent damage to the engine, the airframe or the other equipment of the aircraft by setting the angle of inclination of the leading edge section of the casing with respect to the direction of the line

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of flow of the airflow, in the manner of the present invention as recited in amended claim 1.

In view of the foregoing, it is respectfully submitted that the present invention as recited in amended claim 1, as well as claims 2-5 depending therefrom, clearly patentably distinguish over Mears et al under 35 USC 102 as well as under 35 USC 103.

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Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

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